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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,103	07/18/2003	Steven M. Blumenau	EMC03-10(98102)	2900
7590 Barry W. Chapin, Esq. CHAPIN & HUANG, L.L.C. Westborough Office Park 1700 West Park Drive Westborough, MA 01581			EXAMINER THAI, TUAN V	
			ART UNIT 2186	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			01/29/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/623,103

Applicant(s)

BLUMENAU, STEVEN M.

Examiner

Tuan V. Thai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-6, 10-16, 19-22, 24, 28, 30-35, 39-45, 48, 49, 51 and 55-58 is/are rejected.
- 7) ☒ Claim(s) 7-9, 17, 18, 23, 25-27, 29, 36-38, 46, 47, 50 and 52-54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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**Part III DETAILED ACTION**

***Specification***

1. This office action responsive to communication filed 10/20/2006. This application is continuation of application 09/342,474; now patent number 6,631,442. Claims 2-58 are presented for examination.
2. Claim 1 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made without traverse in the reply filed on 10/20/2006.
3. Applicant is reminded of the duty to fully disclose information under 37 CFR 1.56.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention

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by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 2-4 and 30-33 are rejected under 35 U.S.C. § 102(e) as being anticipated by Noel et al., hereinafter Noel (USPN: 6,381,682);

As per claim 2, Noel discloses the invention as claimed including a method of facilitating access to a storage system comprising utilizing a volume interface (e.g. see figure 1; bus interface 122 with configuration tree 300, figure 3) to provide at least one computer access to a volume/slot (or partition) in the storage system 120 (e.g. see figure 1, column 6, lines 26 et seq.), the storage system including multiple storage devices 120 for storing the volume (e.g. see figure 1); setting parameters in the volume interface to define attributes associated with the volume, while the volume is mounted by the at least one computer, reconfiguring the volume (e.g. see column 6, lines 37 et seq.); and via the volume interface, providing the at least one computer access to the reconfigured volume; for example, Noel discloses configuration tree 300 is established which represented all hardware components in the system, the tree also contain the software partitioning information, wherein access to each partition/volume is carried out utilized the configuration tree

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(e.g. see column 8, lines 28 et seq.; column 9, lines 49 et seq.).

As per claim 3, wherein providing access to the reconfigured volume includes enabling the at least one computer to access the reconfigured volume without having to reboot corresponding operating systems in the at least one computer; for example, Noel discloses Dynamic reconfiguration allows a system administrator to create, resize, or delete domains on the fly and **without rebooting** (e.g. see column 3, lines 24-26); Noel further discloses changing the memory allocation of fragments can be handled by an operating system instance **without the need for a reboot** (e.g. see column 22, lines 24-27).

As per claim 4, Noel discloses providing multiple computers running different operating systems access to the volume, ...by the different operating systems to access data stored in the volume; for example, Noel teaches each cell manages the processors, memory and I/O devices on the nodes as if it were an independent operating system (e.g. see column 3, lines 36 et seq.).

As per claims 30-33, they encompass the same scope of invention as to that of claims 2-4; the claim are therefore rejected for the same reasons as being set forth above.

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***Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-6, 10-16, 19-22, 24, 28, 34-35, 39-45, 48-49, 51 and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noel et al., hereinafter Noel (USPN: 6,381,682) in view of Shih (USPN: 5,517,599)

As per claims 5 and 6, Noel discloses the invention as claimed, detailed above with respect to claim 2. Noel however does not particularly teach implementing the size of volumes/partitions to be transparent to the host or as being claimed as to be appeared to the at least one computer that the corresponding size of the given volume is greater than zero even though there are no corresponding storage devices in the storage system associated with the given volume. Shih discloses the missing element as known to be required in the system of Noel in order to arrive at Applicant's current invention wherein Shih

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discloses his memory system is divided into multiple partitions (volumes) wherein the partitions can be defined in terms of two groups of partitions, each group can have a different size and a different count of partitions; in addition, one group can have several small partitions followed by the second group having several large partitions or visa versa, and these two groups are then replicated throughout the tape volume. Shih further discloses the partition sizes are effectively transparent to a host system (e.g. see column 17, lines 37-44). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the current invention was made to utilize the teaching of Shih in that of Noel system to implement the sizes of the volumes to be transparent to host wherein the size of volumes is greater than zero even though there are no corresponding storage devices in the storage system associated with the given volume. In doing so, it would allow for continuous and uninterrupted operation of the host computers and eliminate the requirement for the host computers to have the capability to multi-tasks; in addition, there is potentially essentially no throughput loss; therefore being greatly advantageous.

As per claim 10, the further limitation of reconfiguring the volume includes modifying a size parameter identifying available storage space in the storage system associated with the volume,

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and wherein the reconfiguring occurs in response to detecting a request to access the storage system and the request requires that the volume be of a minimum size so that the access can be carried out is taught by Noel, for example, Noel discloses in reconfiguring the partition; an operating system instance will map the first page of the configuration tree, obtain the tree size, and then remap the memory allocated for configuration tree usage wherein the total size may include additional memory used by the console for dynamic changes to the tree (e.g. see column 12, lines 56-60).

As per claims 11 and 12; Noel discloses a method of providing at least one computer access to a volume/partition in a storage system, the method comprising utilizing a volume interface (e.g. see figure 1; bus interface 122 with configuration tree 300, figure 3) to enable the at least one computer to access the volume in the storage system 120 (e.g. see figure 1), via the volume interface, keeping track of a corresponding size associated with the volume as well as corresponding storage devices in the storage system associated with the volume (e.g. see column 12, lines 37-42; also see column 9, lines 49 et seq.). Noel, however does not particularly teaches providing an appearance to the at least one computer that the corresponding size of the volume is different than an amount of storage space actually provided by the corresponding storage



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devices in the storage system associated with the volume, nor does Noel teaches providing the appearance includes providing the appearance to the at least one computer that the size of the volume is larger than the amount of storage space actually provided by the corresponding storage devices in the storage system which are associated with the volume. Shih discloses the missing element as known to be required in the system of Noel in order to arrive at Applicant's current invention wherein Shih discloses his memory system is divided into multiple partitions (volumes) wherein the partitions can be defined in terms of two groups of partitions, each group can have a different size and a different count of partitions; in addition, one group can have several small partitions followed by the second group having several large partitions or visa versa, and these two groups are then replicated throughout the tape volume. Shih further discloses the partition sizes are effectively transparent to a host system (e.g. see column 17, lines 37-44). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the current invention was made to utilize the teaching of Shih in that of Noel system to implement the sizes of the volumes to be transparent to host wherein the size of volumes is greater than zero even though there are no corresponding storage devices in the storage system associated with the given volume. In doing so, it would allow for continuous and

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uninterrupted operation of the host computers and eliminate the requirement for the host computers to have the capability to multi-tasks; in addition, there is potentially essentially no throughput loss; therefore being greatly advantageous.

As per claim 13, Noel discloses without interrupting an application executed by the at least one computer, allocating more storage space in the storage system to the volume as the application executed by at least one computer consumes the amount of storage space in the storage system actually associated with the volume (e.g. see column 3, lines 24-26); Noel further discloses changing the memory allocation of fragments can be handled by an operating system instance **without the need for a reboot** (e.g. see column 22, lines 24-27).

As per claim 14, the further limitation of allocating more storage space to the volume occurs in response to detecting that an available amount of free storage space associated with the volume crosses a threshold is taught by Noel since Noel discloses additional memory can be allocated for dynamic changes to the tree (e.g. see column 12, lines 59-60); furthermore, Noel also discloses the partition size is a system dependent feature, and the configuration is defined by software, it is possible to dynamically change partitions and the relative sizes of partitions (e.g. see column 29, lines 42-44).

As per claim 15, Noel discloses the partition size is a

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system dependent feature, and the configuration is defined by software, it is possible to dynamically change partitions and the relative sizes of partitions (e.g. see column 29, lines 42-44).

As per claim 16, the further limitation of maintaining the corresponding size associated with the volume to be a substantially fixed amount more than an actual amount of storage associated with the volume is taught by Noel since Noel discloses that the partition size is a system dependent feature, and the configuration is defined by software, it is possible to dynamically change partitions and the relative sizes of partitions (e.g. see column 29, lines 42-44).

As per claims 19 and 20, Noel discloses a method for providing at least one computer access to a storage system, the method comprising maintaining a plurality of parameters associated with a volume/partition in the storage system (e.g. see figure 1; column 6, lines 37 et seq.); utilizing a first parameter of the plurality of parameters to track a corresponding size associated with the volume (e.g. see column 18, lines 31-33). Noel discloses the invention as claimed with the exception of implementing the size of volumes/partitions to be transparent to the host or as being claimed as providing an appearance to the at least one computer that the corresponding size of the volume is greater than zero even though there is no storage space in the storage system associated with the volume

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during times when the at least one computer does not require access to any data stored in the volume. Shih discloses the missing element as known to be required in the system of Noel in order to arrive at Applicant's current invention wherein Shih discloses his memory system is divided into multiple partitions (volumes) wherein the partitions can be defined in terms of two groups of partitions, each group can have a different size and a different count of partitions; in addition, one group can have several small partitions followed by the second group having several large partitions or visa versa, and these two groups are then replicated throughout the tape volume. **Shih further discloses the partition sizes are effectively transparent to a host system (e.g. see column 17, lines 37-44).** Accordingly, it would have been obvious to one having ordinary skill in the art at the time the current invention was made to utilize the teaching of Shih in that of Noel system to implement the sizes of the volumes to be transparent to host wherein the size of volumes is greater than zero even though there are no corresponding storage devices in the storage system associated with the given volume. In doing so, it would allow for continuous and uninterrupted operation of the host computers and eliminate the requirement for the host computers to have the capability to multi-tasks; in addition, there is potentially

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essentially no throughput loss; therefore being greatly advantageous.

As per claims 21-22 and 28, Noel discloses a method of providing access to a storage system, the method comprising maintaining a plurality of parameters associated with a volume in the storage system (e.g. see figure 1; column 6, lines 37 et seq.); utilizing a first parameter of the plurality of parameters to track a corresponding size associated with the volume and a second parameter to track corresponding storage devices in the storage system associated with the volume (e.g. see column 18, lines 31-33). Noel discloses the invention as claimed with the exception of providing an appearance to a set of computers that the corresponding size of the volume is zero when there is no storage space and no storage devices in the storage system associated with the volume while a given computer running a backup application has access to the volume stored in the storage system (claims 21-22), or simulating the actual size of the second volume (claim 28). Shih discloses the missing element as known to be required in the system of Noel in order to arrive at Applicant's current invention wherein Shih discloses his memory system is divided into multiple partitions (volumes) wherein the partitions can be defined in terms of two groups of partitions, each group can have a different size and a different count of partitions; in addition, one group can have

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several small partitions followed by the second group having several large partitions or visa versa, and these two groups are then replicated throughout the tape volume. **Shih further discloses the partition sizes are effectively transparent to a host system (e.g. see column 17, lines 37-44)** regardless in what operation the host is currently present. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the current invention was made to utilize the teaching of Shih in that of Noel system to implement the sizes of the volumes to be transparent to host wherein the size of volumes is greater than zero even though there are no corresponding storage devices in the storage system associated with the given volume.

In doing so, it would allow for continuous and uninterrupted operation of the host computers and eliminate the requirement for the host computers to have the capability to multi-tasks; in addition, there is potentially essentially no throughput loss; therefore being greatly advantageous.

As per claim 24, Noel discloses additional memory can be allocated for dynamic changes to the tree (e.g. see column 12, lines 59-60); furthermore, Noel also discloses the partition size is a system dependent feature, and the configuration is defined by software, it is possible to dynamically change partitions and the relative sizes of partitions (e.g. see column 29, lines 42-44).

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As per claims 34-35 and 39, they encompass the same scope of invention as to that of claims 5-6 and 10; the claim are therefore rejected for the same reasons as being set forth above.

As per claims 40-45, they encompass the same scope of invention as to that of claims 11-16; the claim are therefore rejected for the same reasons as being set forth above.

As per claims 48-49 and 51, they encompass the same scope of invention as to that of claims 21-22 and 24; the claim are therefore rejected for the same reasons as being set forth above.

As per claims 55-58; see arguments with respect to claims 2, 11, 19, 21 and 28 respectively. Noel and Shih disclose the invention as claimed, Noel however does not particularly disclose a computer-readable medium encoded a computer instruction for performing the steps as being claimed in claims 55-58. However, one of ordinary skill in the art would have recognized that computer readable medium (i.e., floppy, cd-rom, etc.) carrying computer-executable instructions for implementing a method, because it would facilitate the transporting and installing of the method on other systems, is generally well-known in the art. For example, a copy of the Microsoft Windows operating system can be found on a cd-rom from which Windows can be installed onto other systems, which is a lot easier than running a long cable or hand typing the software onto another system. Therefore, it would have been obvious to put Noel and Shih's program on a

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computer readable medium, because it would facilitate the transporting, installing and implementing of Noel and Shih's program on other systems.

**Allowable subject matter**

8. Claims 7, 17, 23, 25, 26, 29, 36, 46, 50, 52 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims. Claims 8-9, 18, 27, 37-38, 47 and 54 are also allowable since they are depended on the indicated allowable claims 7, 17, 36, 46 and 53.

**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan V. Thai whose telephone number is (571)-272-41287. The examiner can normally be reached from 6:30 A.M. to 4:00 P.M.

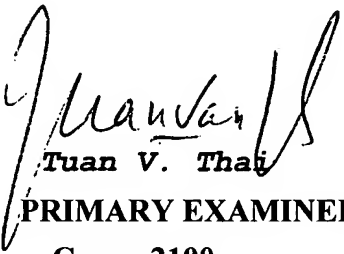
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew M. Kim can be reached on (571)-272-4182. The fax phone number for the organization where this application or proceeding is assigned is



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571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**TVT**/January 07, 2007

  
**Tuan V. Thai**  
**PRIMARY EXAMINER**  
**Group 2100**